

## Description

### *MOVING PUNCHING BAG AND METHOD*

#### **CROSS REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims the benefit of provisional application \_\_\_\_\_.

#### **BACKGROUND OF INVENTION**

[0002] This invention relates to an apparatus and method of use for conducting the physical training of a boxer, kick boxer, or other similarly trained combatants. More particularly, this invention relates to an apparatus and method to improve the coordination, reflex, and technique of a combatant by simulating the random movement of an opponent.

[0003] Equipment that is traditionally used for training a combatant ranges from a small tethered ball to heavy bags. Other such equipment includes light punching bags, training bags, athletic bags, punching bags filled with air or water, speed bags, rebound punching aids, and other types of training targets.

[0004] The traditional training tools fail to fully develop the coordination, reflex and technique of a training combatant because they are affixed to a specified location. By fixing the training tool to a single location, the training combatant does not fully develop skills that are required when facing an opponent that moves in random directions.

[0005] There exist only a few devices that simulate the random movement of an opponent. Patent 5,048,822 discloses a punching bag mounted upon a raised track which can be moved along a path. Patent 5,224,912 discloses an overhead punching bag support comprising a beam, with rotatable and linear movement. Patent 4,911,428 discloses an overhead support comprising a beam having a punching bag support at one end of the beam and a caster wheel at the opposite end. Each of these supports requires overhead installation, which makes each of these devices impractical for a building or gym which has a high ceiling or inadequate means to support the overhead installation.

[0006] A second shortcoming of these devices is the permanence of their installation. Combatants do not always train where they compete, meaning that the preferred training tools cannot be easily relocated to a location where the training

will be completed or where the competition will take place.

- [0007] A need exists for a free-standing, self supporting, easily relocated training device which simulates the random movement of an opponent.

#### **SUMMARY OF INVENTION**

- [0008] The void in the prior art is filled by the present invention. The present invention provides a free-standing, self supporting, rotatable, and relocatable apparatus from which to suspend a training device, whereby the movement of the training device can be controlled so as to simulate the random movement of an opponent, thereby improving upon the coordination, reflexes, and technique of a trainee.
- [0009] One embodiment of the present invention is an apparatus comprising a base, a support connected to the base, a vertical member rotatably connected to the support, a horizontal member, a means for rotating the vertical member, and a means for suspending a training device to the horizontal member. The apparatus is constructed such that it is free-standing and easily dismantled for transportation.
- [0010] In one aspect, the invention provides a free-standing ro-

tatable support apparatus useful for physical training. The apparatus has a support base, a rotatable shaft extending upward from the support base, a bearing locator for positioning at least one bearing for the shaft above the support base, a transverse member secured to the shaft and spaced from the support base, and a training target depending from the transverse member laterally spaced from the shaft. The apparatus also has a drive for rotating the vertical member.

[0011] The support base can have a flat plate, which can be circular, rectangular, polygonal or the like. The support base can alternatively have three or more outwardly extending legs.

[0012] The transverse member can be reinforced with truss supports. A length from the shaft to a farthest end of the transverse member is preferably greater than a distance from the shaft to a furthest point on a periphery of the support base.

[0013] The drive can be an electric motor, especially a reversible motor. The motor can be a variable speed motor, optionally including a controller, such as for example, a local control, a remote control, a programmable control mechanism, and so on.

[0014] The training target can be a heavy bag, a punching bag, a speed bag, or the like. The training target can be made of polymer foam.

[0015] In another aspect, the invention provides a method for conducting physical training with the apparatus described above. The method can include positioning the apparatus on a floor of a training area, and rotating the target in a circular arc around the shaft while a trainee spars with the training target. The method can also include randomly varying the direction of rotation, randomly varying the speed of the rotation, or a combination thereof.

#### **BRIEF DESCRIPTION OF DRAWINGS**

[0016] Figure 1 is a side elevation view of a preferred embodiment of the apparatus of the present invention.

[0017] Figure 2 is a side elevation of the bearing locator and base of the apparatus of Figure 1.

[0018] Figure 3 is a plan view of the base of the apparatus of Figures 1 and 2.

[0019] Figure 4 is a front elevation of the bearing locator and base of Figure 2.

[0020] Figure 5 is a side view of the transverse member of the apparatus of Figure 1.

[0021] Figure 6 is a bottom view of the transverse member of

Figure 5.

[0022] Figure 7 is a top plan view of the apparatus of Figures 1–6.

#### **DETAILED DESCRIPTION**

[0023] One embodiment of the apparatus of the present invention is shown in Figures 1. The apparatus generally consists of a support base 10, bearing locator 20, drive 30, rotatable shaft 40, transverse member 50, and training target 60, as shown in Figure 1.

[0024] The preferred embodiment is shown in Figures 2– 6, illustrating the preferred component parts of the apparatus. It is easily understood by those skilled in the art that minor modifications of the apparatus or substitutions of like components does not vary the scope of the present invention.

[0025] As shown in Figures 2 and 3, the base support 10 has a width,  $w$ , and a thickness,  $t$ , such that the apparatus is sturdy, freestanding and will be stable when a heavy bag or other training targets are connected to and used with the apparatus. Although the preferred embodiment depicts the base support as square in shape, it is readily understood that the shape of the base support can be of any variety of shapes, including round, oval, octagonal, etc.

[0026] Support base 10 further includes holes 13 which are used to bolt the bottom shaft support 17 to the support base 10. Holes 13 are positioned near the center of support base 10 so as to provide stability to the structure during operation of the apparatus. It should be readily understood that bottom shaft support 17 can also be connected to support base 10 by screwed connection, welding, or other well known means.

[0027] As shown in Figure 2, bearing locator 20 is attached to the base support 10. Bearing locator 20 generally consists of angle support 21, and vertical support 22, each of which is preferentially welded to base support 10. Angle support 21 and vertical support 22 can alternatively be bolted, screwed, etc. to base support 10. Bearing locator 20 supports shaft 40 during operation and is designed to promote stability of the apparatus.

[0028] Plates 23, 24, and 25 are attached to vertical support 22, as shown in Figures 2 and 4. Plate 23 is located at the same height for which the drive 30 is desired to be installed. Plate 24 is preferably located near the middle of vertical support 22, and plate 25 is preferentially located at the top of vertical support 22.

[0029] Bearings 27 and 28 are attached to plates 24 and 25. Bear-

ings 27 and 28 have an inner diameter similar to that of the outer diameter of shaft 40, such that shaft 40 can be inserted through bearings 27 and 28. Bearings 27 and 28 can further include bearings or other devices commonly used to decrease the friction associated with the rotation of shaft 40 while simultaneously supporting shaft 40.

[0030] Vertical support 22 is located such that bearings 27 and 28 are vertically aligned with bottom shaft support 17. Bottom shaft support 17 is similar to bearings 27 and 28, having an inner diameter such that shaft 40 can be inserted. Bottom shaft support 17 can further include bearings or other means to decrease the friction associated with the rotation of shaft 40.

[0031] Returning to Figure 1, shaft 40 has a top end and a bottom end. The bottom end is placed in bottom shaft supports 17, such that the top end is above bearing 28. On the top of shaft 40 is a connection device 41A. Connection device 41A mates with connection device 41B such that shaft 40 and transverse member 50 are dependently connected, so that transverse member 50 turns in unison with the rotation of shaft 40. Connection device 41A and 41B may be a flanged connection or a similar device for mating two parts.



[0032] A coupling device (not shown) can be attached to shaft 40. The coupling device allows for drive 30 to be used for rotating shaft 40 by means of a pulley or other common methods for imparting rotation on a shaft. In an alternative embodiment, shaft 40 is directly coupled to drive 30.

[0033] Transverse member 50 is shown in detail in Figures 5 and 6. Training target 60 is connected at one end of transverse member 50. The overall length  $L$  of horizontal member 50 is based upon two factors. The first is the width or diameter of base 10. The distance from connection device 41B to the middle of training target 60 should be greater than the distance from the location of bottom shaft support 17 to any point along the perimeter of support base 10. This will help ensure that support base 10 does not interfere with the trainee while the device is in operation. The distance from the connection device 41B to the end opposite training target 60, and the remaining structure shown as part of horizontal member 50 is preferably based upon the structure needed to support training target 60, so as to provide stability during use of the apparatus and to provide durability of the apparatus.

[0034] Drive 30 can be chosen from a variety of equipment. In one embodiment of the invention, drive 30 is a reversible con-

stant speed motor. This would allow shaft 40 to be rotated clockwise or counterclockwise, as indicated by the arrows in Figure 7. The rotation in this manner allows the simulation of an opponent advancing or retreating, or an opponent crossing from the left or right, depending upon the position of the trainee (A, B, or C), as shown in Figure 7.

[0035] In another embodiment, drive 30 is a reversible variable speed motor such that shaft 40 can be rotated clockwise or counterclockwise at varying speeds so as to simulate an opponent that does not move at constant speeds.

[0036] In the preferred embodiment, drive 30 is a reversible variable speed variable frequency motor with control means 35 such that the rotation of shaft 40 can be remotely controlled so as to randomly rotate shaft 40 clockwise or counterclockwise at varying speeds so as to best simulate the random movements of an opponent.

[0037] The apparatus of the present invention is typically constructed of primarily of steel however other suitable materials can also be used. The overall shape and design of the apparatus may be varied based upon the materials used, the inherent properties of the materials, and the dimensions of the component parts without deviating from the scope of this invention.

[0038] Training target 60 can be a speed bag, a heavy bag, a light punching bag, a rebound target, or any number of other training devices common to boxing and the martial arts or other forms of combatant arts. The apparatus of the present invention preferably has a connection which is universally adapted to the aforementioned training targets 60.

[0039] In a preferred embodiment, training target 60 is selected to be a large foam target suspended for use by a trainee. The foam material is preferably non-rigid polyurethane foam of type M110B, manufactured by E.R. Carpenter, having a density between 2.1 and 2.18 lb/cu. ft., and an IOD firmness between 105 and 115. This type of foam is suitable for striking without protection on the trainee's appendages, as is often required with other types of training devices.

[0040] A preferred method for use of the apparatus was alluded to earlier in this description. Referring again to Figures 1 and 7, the desired training target 60 is attached to transverse member 50. The trainer or coach will remotely control the drive 30 to vary the speed and direction that the training target 60 is traveling while the trainee practices his art on the training target 60. To improve the trainee's

skill, reflexes, coordination, and technique, the trainer will preferentially control drive 30 in a random pattern so as to mimic an opponent.